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A NEW AND SAFE METHOD

OF

# Cutting Cœsophageal Strictures

BY

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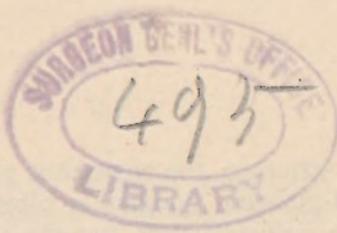
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A NEW AND SAFE METHOD  
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CUTTING OESOPHAGEAL STRICTURES.<sup>1</sup>  
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My remarks this evening will have to do with one of the varieties of stricture of the oesophagus that has always taxed the skill of the surgeon to safely remedy, and usually has baffled him, namely, the dense cicatrical contraction following burning of the canal by caustics or acids.

Within a few weeks after the accident a rather rapid narrowing of the canal ensues at one or several points, and sometimes over quite a length of the oesophagus, the favorite sites being at the upper and lower segments. The caustic, it would seem, is often arrested by oesophageal spasm near the cardiac orifice and there produces its destructive work.

In the great majority of patients who have been the victims of this accident, the inability to swallow does not come for many weeks, as the stricture is not tight enough to be a complete barrier; hence the dilatation treatment is not carried on earlier, and the patients present themselves six months or a year after the accident, when they have become emaciated and reduced to fluid diet. It is then that the surgeon finds himself forced to deal with a

<sup>1</sup> Read before the New York Clinical Society.

very tight stricture, the treatment of which by dilatation with small-pointed bougies is often not only a matter of extreme difficulty but fraught with grave danger of rupture through the soft and dilated wall of the tube above the site of trouble.

More than that, there soon comes a time when many of the strictures will allow a moderate quantity of milk to pass through, but are utterly impassable to even the smallest whalebone bougie. In the care of these cases the surgeon now has to resort to one of three methods: Either, 1, opening the oesophagus in the neck, when the stricture happens to be in the upper part, and splitting the dense cicatrical tissue, as one would split a urethral stricture deep in the perineum; or, 2, dividing the stricture within the oesophagus by passing a concealed knife on a flexible stem from the mouth down to the trouble, and doing internal oesophagotomy; or, 3, opening the stomach and passing upward either bougies to dilate or a knife to cut the obstruction.

The first method—external oesophagotomy—can apply only to the unusual cases of strictures high up in the neck. It is a comparatively safe and not a difficult operation, inasmuch as the tissues to be cut are under the operator's eye, and vital parts are not likely to be injured. (Billroth's method.)

The second, or internal oesophagotomy, is universally admitted to be much more dangerous—and rightly so. The oesophagus is in the closest proximity to the aorta, the trachea, the thyroid artery, the recurrent laryngeal nerve, and many large veins. The exact thickness of the dense stricture cannot be calculated, and a knife which may be exposed to cut only two millimetres may even, thereby, cut through to the cellular layer outside the tube and divide one of the vital parts just mentioned.

Albert, in his latest work, says: "Internal cesophagotomy is a method which has caused the designing of many instruments, of which one can say that the operator never knows just what he has cut with them when he uses them."

"A few cases of lucky accident where the patient escapes alive—no one knows how—should not mislead us, or encourage us to employ a method which in grave cases is not easily calculable, in milder ones superfluous, and in all supplanted by the safer methods of external oesophagotomy or gastrostomy."

The patients who have been saved from starvation by establishing a permanent opening into the stomach for introduction of food are now numbered by scores.

It remained for Albert to do the first case of dilatation of the œsophageal stricture through the stomach and save his patient, the gastric fistula afterward healing spontaneously. This was one of the cases of strictures, impermeable from above, in which after a while he could pass a stiff catgut from below and successively larger bougies till the dilatation permitted swallowing food.

Bergmann afterward did the same and closed the gastric fistula by a plastic operation. Maydl went one step further and passed a thread through, to which he attached larger and larger bougies and drew them up.

From accumulated experience it now seems probable that in the majority of œsophageal strictures, low down, which will not admit of even the smallest bougie enter-

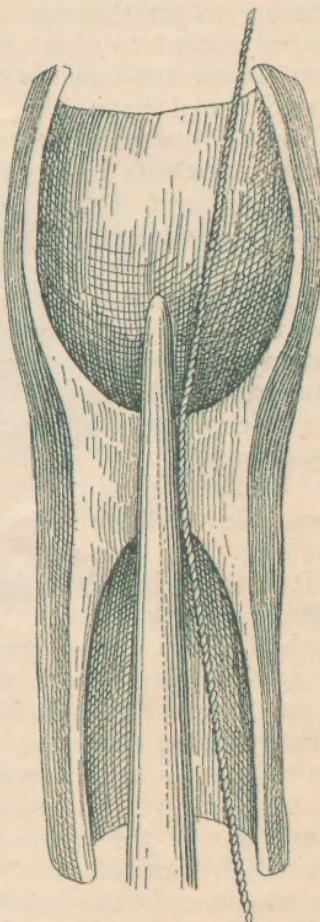


FIG. I.

ing from above, it is possible to enter the opening from below through a gastric incision. This is due to the fact that the œsophagus above the narrow stricture has become dilated by reason of the constant weight of food pressing to get through it and has ceased to be funnel-shaped enough to direct the bougie aright ; while viewed from below the canal still keeps a perfectly narrow inverted funnel-shape.

Even if one can cause a fine bougie to enter, it is not practical or safe to stretch many of the dense diseased strictures, even by the approach through the stomach, and one must leave the patient to nourish permanently through the gastric fistula or try the dangerous cutting internally. Konig says that the fistula is better than to resort to the dangerous and bloody internal œsophagotomy, even though Braun and some French surgeons advocate the latter. He quotes Gussenbauer as having cut a deep stricture, after passing an instrument into an œsophageal wound in the neck, and cutting to the right and left, and then dilating. Many operators have since been able to dilate yielding strictures from the stomach opening.

It is to obviate the risks of cutting internally in tough and extensive strictures that I have devised and used the method which I now speak of, namely, cutting with a string—the tissues made tense by dilating with a bougie at the time. The principle involved is a commonly experienced one, that even a blunt object like a string, if drawn across a tense tissue (the web between the fingers for instance) will cause a cut to occur which would not take place if the tissue were flabby. Hence the self-limited division of the stricture goes on only so long as the bougie maintains local tension at the site of stricture.

Experience has shown, in the case now cited, that when the dilatation had been carried to its utmost limit by a small conical bougie, a string previously passed through the stricture being drawn back and forth, the dilating bougie could be rapidly advanced where before it had come to a

standstill, in spite of any legitimate force that had been used. This advance was made with the loss of only a few drops of blood, and by such rapid strides that only four bougies were needed to enlarge it from the size of the smallest to one as large as the normal oesophagus would bear.

The case on which this method has succeeded so well is as follows :

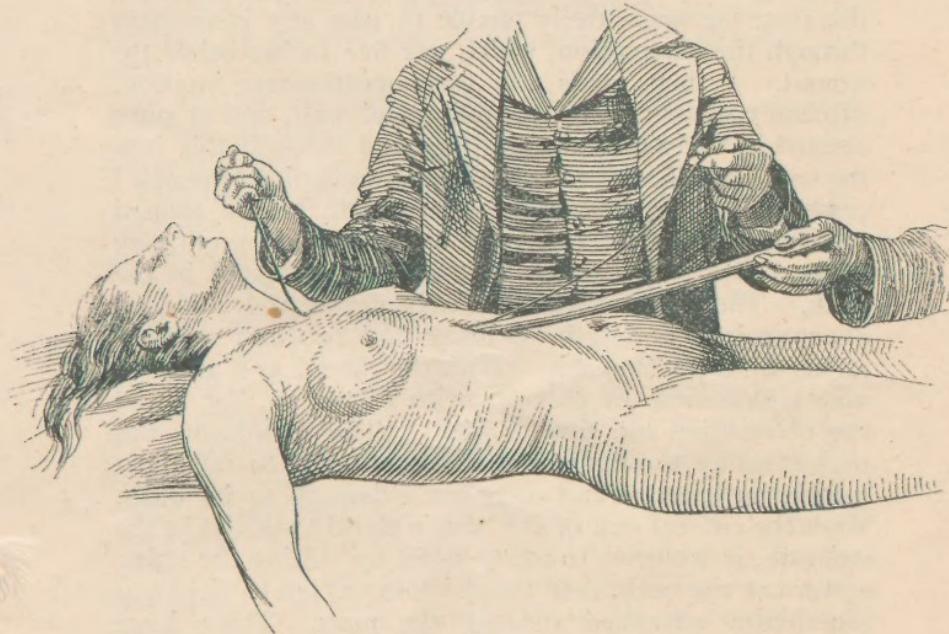


FIG. 2.

Miss M. F—, aged thirty, swallowed half a glass of strongest ammonia three years ago. During the next year the usual signs of stricture of the oesophagus ensued, with emaciation, reducing her from 150 pounds to 100 pounds in weight. She became unable to swallow any but liquid diet, and put herself under the care of my partner, Dr. Arthur L. Fisk, who tried in vain to pass any form of bougie through the stricture.

The obstruction was thirteen and one-half inches from her teeth. From the behavior of swallowed food regurgitating there was every reason to believe there was a considerable pouching of the tube above the stricture. Dr. Fisk kindly transferred her to my service at St. Luke's Hospital, where I operated four days later, December 9, 1892, believing I might possibly do an internal dilatation or cesophagotomy through an opening in the neck. I tried this first, but was utterly unable to pass any instrument through the obstruction, which was five inches below the wound. I then made the usual gastrostomy incision, stitched the stomach to the abdominal wall, and at once opened it. My finger could be passed through this into the cardiac orifice of the oesophagus, and guided thereby I passed a very small conical gum elastic bougie upward with some force, and to its end I secured a piece of heavy braided silk; this I drew out through the wound in the neck. The stricture was extremely dense, and I judged about an inch in length, its lower end two and one-half inches from the stomach. With the thread as a guide, I now endeavored to proceed with dilatation, but found the obstruction too firm to yield. The oesophagus was pushed up by the force, and it seemed as if to use more would tear it across and cause grave damage to its walls. With the conical end of the bougie tightly wedged in the stricture, it occurred to me to assist by pulling the string upward at the neck, then the stricture was felt to yield and the dilator advanced through the mass. Three large bougies were passed consecutively, and each was tightly crowded in while the string was see-sawed back and forth. Thus the stretching was kept at its maximum, and the bougies passed with remarkable ease the entire length of the oesophagus. The bleeding was practically insignificant. I am perfectly certain that except for this device the stricture could not have been relieved. I made several prior attempts to introduce oesophagotomes, and even the Otis urethrotome, through the stricture from the stomach, but was unable to do so. The patient experienced

little or no shock from the operation, and subsequently had almost no fever.

After the dilatation I drew up into the œsophagus to a point higher than the stricture a rubber tube the size of one's finger, and left it *in situ*, the lower end coming out of the gastrostomy wound, thus giving the patient a chance to frequently rinse her mouth and throat with ice-water, which, when she swallowed, poured out of the tube below.

Nutritious food was meanwhile regularly placed in the stomach by another tube. Uninterrupted recovery ensued.

At the end of a week I again etherized her and repeated the free dilatation, the string serving to assist a still larger bougie to pass as readily as before.

This has since been passed without anaesthesia from the mouth to the stomach, and the string has been permanently removed.

N. B.—The œsophageal fistula in the neck closed spontaneously in two weeks.

The gastric fistula was secured against leakage by a von Hacker's double rubber balloon and the patient allowed to eat everything. She had no difficulty in swallowing raw oysters, meat, vegetables, as naturally as ever, for the first time in four years.

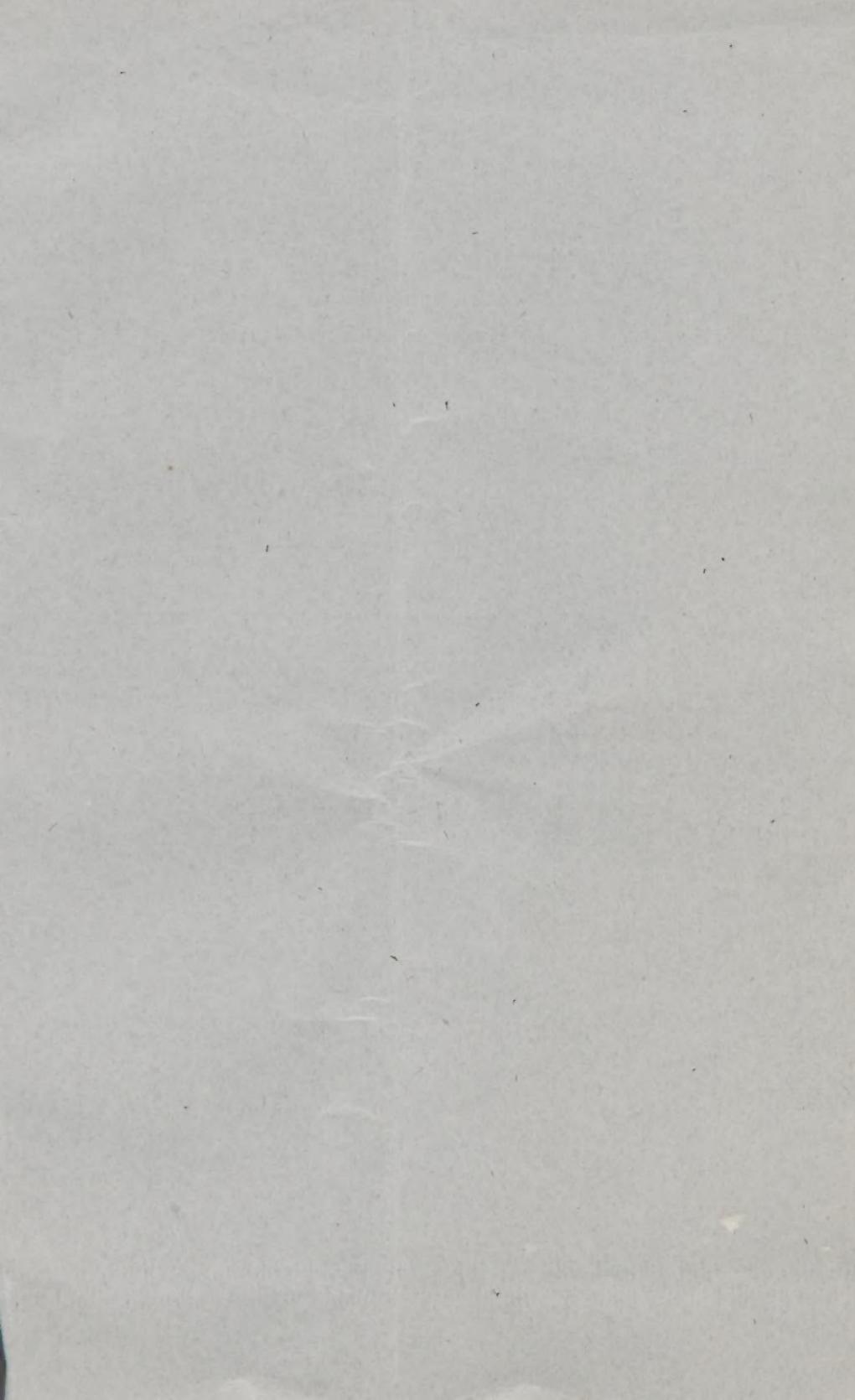
She gained four and a half pounds a week. Eight weeks after the gastrostomy, I operated to close the fistula.

The stomach was dissected from the abdominal wall. The fistulous aperture, nearly two inches in length, was inverted and secured by a first row of continuous Lambert suture of fine silk and one of Halsted's interrupted quilted suture outside of this. This was dropped into the abdomen and the external wound closed with silk-worm-gut. Her convalescence was perfect. The largest bougie now passes down the œsophagus with perfect freedom, and its use will be continued for a year or two by the patient.

To sum up, the operation for impermeable or very tight œsophageal stricture is best undertaken as follows: Gas-

trostomy is done by the oblique incision along the margin of the costal cartilages. Digital examination of the œsophageal orifice is made and a small conical gum elastic bougie guided into it by the finger. If dilatation is easy larger bougies are to be used, but if resistance is great, force is dangerous. The smallest bougie is then to be made to carry a heavy-braided ligature silk from the stomach to the mouth. A larger bougie is now passed from the stomach alongside the string, and pressed tightly into the stricture so as to stretch it. The string is now drawn upward by the fingers introduced well back in the mouth, and the bougie will be felt to advance at once as the string wears away the tense stricture. Larger bougies are now pressed in and the string see-sawed back and forth. When the largest size has been attained a corresponding rubber tube is drawn up the œsophagus past the point of stricture, its lower end remaining outside the stomach wound. A smaller tube is introduced into the stomach for nourishment. The patient can thus drink water for refreshing the mouth, or swallow saliva without contaminating the wounded surface which the tube also serves to keep dilated. The large tube may be removed the second or third day, and dilating bougies introduced from the mouth after the fourth day. The gastrostomy wound may be closed, whenever the patient has gained strength, by a plastic operation.

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